

code for receiving one or more images of a plurality of components of a plurality of cells, wherein said plurality of cells are of different cell types and wherein said plurality of cells have been exposed to the manipulation;

code for determining a plurality of features of a first component of said plurality of components and a plurality of features of a second component of said plurality of components;

code for combining a plurality of features of said first component with a plurality of features of said second component to yield a plurality of descriptors;

code for performing principal component analysis on said plurality of descriptors;

code for determining properties of said manipulation based upon said analysis;

and

a computer readable storage medium for holding the codes.

51. (Amended) The computer program product of claim 49 wherein said manipulation comprises applying a chemical factor.

52. (Amended) The computer program product of claim 49 wherein said property comprises toxicity.

53. (Amended) The computer program product of claim 49 wherein said property comprises a mechanism of action.

54. (Amended) The computer program product of claim 49 wherein said property comprises at least one of a plurality of pharmacological properties.

56. (Twice Amended) A computer program product comprising a machine readable medium on which is provided program instructions for determining an effect of a manipulation on a plurality of cells of different cell types, the instructions comprising:

code for receiving one or more images of a plurality of components of a plurality of cells, wherein said plurality of cells are of different cell types and wherein said plurality of cells have been exposed to the manipulation;

code for determining a plurality of features of a first component of said plurality of components and a plurality of features of a second component of said plurality of components;

code for combining at least one of a plurality of features of said first component with at least one of a plurality of features of said second component; and

E3 cont.  
code for performing statistical analysis on said plurality of features wherein said statistical analysis comprises multidimensional representations, principal component analysis, or frequency based representations on at least said combined features to determine the effect of the manipulation on the plurality of cells.

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E4  
63. (Three Times Amended) A computer program product comprising a machine readable medium on which is provided program instructions for predicting properties of a chemical compound based on information about effects of at least one of a plurality of known compounds on a plurality of cells of different cell types, the instructions comprising:

code for receiving one or more images of a plurality of components of a plurality of cells of different cell types that have been exposed to the chemical compound;

code for determining, from the one or more images, multiple descriptors for multiple components of the plurality of cells of said different cell lines, wherein said code for determining a multiple descriptors comprises code for performing principal component analysis on the said multiple descriptors;

code for determining a relationship between said descriptors of said chemical compound with other descriptors of said known compounds; and

code for making an inference about said chemical compound based upon said other descriptors,

wherein said descriptors and other descriptors comprise numeric or logical values.

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Please **add** the following claims:

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E5  
66. The computer program product of claim 49 wherein said manipulation is selected from the group consisting of applying a hormone, applying a growth factor, applying an extracellular matrix component, applying a virus, applying an electroporation, applying an antisense polynucleotide, applying a gene knock-out, applying a gene overexpression, applying a gene mutation, applying a cell fusion, and combinations thereof

Please **cancel** Claims 58 and 59.